US Army Corps of Engineers
Omaha District

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
&
FINDING OF NO SIGNIFICANT IMPACT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4
May 2013

Photo by Dave Crane, 2008

Prepared by:
U.S. Army Corps of Engineers, Omaha District
Environmental Resources and Missouri River Recovery Program Plan Formulation Section
Planning Branch, CENWO-PM-AC
1616 Capitol Avenue
Omaha, Nebraska 68102-4901

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
MAY 2013		**00-00-2013 to 00-00-2013**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Louisville Bend State Wildlife Area Fish and Wildlife Habitat Rehabilitation Monona County, Iowa Missouri River Mile 681.7-685.4	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U. S. Army Corps of Engineers,Omaha District ,1616 Capitol Avenue,Omaha,NE,68102**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**49**	

FINDING OF NO SIGNIFICANT IMPACT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4
May 2013

In accordance with the National Environmental Policy Act (NEPA) and implementing regulations, a Supplemental Environmental Assessment (EA) has been prepared for the proposed creation of a 2,700-foot connectivity channel and the creation of an approximately 2.4-acre overwintering pool for fish at the Louisville Bend State Wildlife Area (LBSWA) in Monona County, Iowa. The purpose of the proposed action is to restore hydraulic connectivity to a backwater wetland complex, referred to in this document as the Louisville Oxbow Lake (oxbow) from the pumping facility through a connectivity channel. The proposed action is needed due to damages that were sustained to the current channel during the 2011 flood event and to utilize the opportunity for habitat improvement. The original project was created to mitigate for aquatic and terrestrial habitat losses that resulted from implementation of the Missouri River Bank Stabilization and Navigation Project. The proposed action is necessary to restore function of the original project.

Three alternatives were considered for the restoration of Louisville Bend. They include: the No Action Alternative, the excavation of the entire original channel alignment, and the excavation of a new channel alignment. Excavation of the original channel alignment was eliminated from further consideration because it is more cost effective and efficient to create a new and shorter channel that would still provide benefits for fish and wildlife habitat.

The Supplemental EA and comments received from the resource agencies were used to determine whether the proposed action would have significant impacts to the human environment. All environmental, social, and economic factors relevant to the proposal were considered in the Supplemental EA. No significant adverse impacts to these resources are expected to occur. The proposed project would restore the original habitat quantity and quality to provide benefits to resident and migratory fish and wildlife species. The proposed action will be in compliance with applicable environmental statutes.

It is my finding, based on the Supplemental EA that the proposed Federal activity will not have any significant adverse impacts on the environment and will not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an Environmental Impact Statement will not be prepared.

Date: _____

_____

Joel R. Cross
Colonel, Corps of Engineers
District Commander

Table of Contents

List of Figures

List of Appendices

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4
May 2013

1. INTRODUCTION

1.1 Background

This document supplements the document entitled: *Louisville Bend State Wildlife Area Fish and Wildlife Habitat Rehabilitation, Final Definite Project Report with Integrated Environmental Assessment and Section 404(b)(1) Evaluation, Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project, Monona County, Iowa, February 1993*. This Definite Project Report (DPR) disclosed the potential environmental impacts resulting from the restoration of aquatic and terrestrial habitat at Louisville Bend. Improvement of the Louisville Bend State Wildlife Area (LBSWA) was proposed as part of the Missouri River Bank Stabilization and Navigation (BSNP) Fish and Wildlife Mitigation Project (Mitigation Project).

Historically, the Missouri River was 2,000 to 4,000 feet wide in this area, and the oxbow lake was part of the active channel. Shallow water habitat (SWH) and deep water habitat (DWH) existed concurrently. This habitat was critical for migratory waterfowl as it provided feeding, breeding and sheltering habitat located in the Mississippi Flyway. This habitat was also utilized by a variety of native aquatic and terrestrial species. Construction and operation of the BSNP channelized the Missouri River, which narrowed the width of the main channel and eliminated depth diversity in order to create and maintain a self-scouring, deep navigation channel. Prior to the DPR in 1993, streambed degradation and flood-related deposition left the Louisville Oxbow Lake (oxbow) disconnected and virtually dry for the majority of the year.

This Supplemental Environmental Assessment (EA) defines the potential environmental effects of the proposed project resulting from rehabilitating features of the original project that were damaged by the 2011 flood and constructing a new feature to enhance the existing habitat at Louisville Bend. See Appendix D for photographs of flood-related damages to the area.

1.2 Project Authority

The Missouri River Recovery Program (MRRP) was established by the U.S. Army Corps of Engineers (Corps) in 2003, which combined two related efforts including the responsibilities of compliance with the U.S. Fish and Wildlife Service (USFWS) 2003 Amendment to the 2000 Biological Opinion (BiOp) on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System, and acquiring and developing lands to produce habitat as directed by the BSNP Mitigation Project.

The proposed project would be constructed under the authority of the Mitigation Project. The Missouri River BSNP Mitigation Project of Missouri, Kansas, Iowa, and Nebraska was authorized by Section 601 (a) of the Water Resources Development Act (WRDA) of 1986

[Public Law (PL) 99-662]. The authorization included the acquisition and development of 29,900 acres of land, and habitat development on an additional 18,200 acres of existing public land in the states of Iowa, Kansas, Missouri, and Nebraska. The total amount of land authorized for mitigation by WRDA86 was 48,100 acres. Section 334(a) of WRDA99 (PL 106-53) modified the Mitigation Project by increasing the amount of acreage to be acquired and/or mitigated by 118,650 acres. As a result, the total amount of land authorized for mitigation is currently 166,750 acres. Approximately 61,155 acres have been acquired for mitigation through fiscal year 2012.

The BiOp also outlined a Reasonable and Prudent Alternative (RPA), which, if implemented, would preclude jeopardizing the threatened piping plover (*Charadrius melodus*) and the endangered interior least tern (*Sterna antillarum athalassos)* and pallid sturgeon (*Scaphirhynchus albus*). One element of the RPA is to create SWH to help recreate a level of complexity to the river that existed prior to the BSNP in order to provide spawning and rearing habitat for the pallid sturgeon.

The downstream end of the oxbow functions as SWH. It was noted in the BiOp that because of Corps actions on the Missouri River, which caused a decrease of historically occurring habitat, SWH creation and preservation would become a focal point in the Corps' mission. The BiOp defines SWH as aquatic habitat with depths less than 5 feet deep and velocities less than 2.5 feet/second. A clarified definition of SWH was provided by the USFWS in a letter dated June 29, 2009, which stated that SWH included sidechannels, backwaters, depositional sandbars detached from the bank and low-lying depositional areas. Key components of SWH are their dynamic characteristics of depositional and erosive areas, shallow waters intermixed with deeper holes, and comparatively lower current velocities and higher water temperatures than the main river channel.

1.3 Brief Description of the Original Project

The LBSWA was historically an approximately 910-acre area owned and managed by the Iowa Department of Natural Resources (IDNR) located in Monona County, Iowa. This area is located along the left descending bank of the Missouri River between approximate river miles (RM) 681.7 and 685.4 (refer to Figure 1). An interagency coordination team consisting of the Corps, the USFWS, the Nebraska Game and Parks Commission (NGPC), the Missouri Department of Conservation (MDC), the Kansas Department of Wildlife and Parks (KDWP) and IDNR formed to develop criteria, project plans and priorities and to enhance public awareness of the project.

Due to streambed degradation and flood-related sediment deposition, a historically occurring, oxbow lake had degraded and was only holding water during high-water events, thus reducing the habitat quantity and quality in the oxbow for the majority of the year. Great potential was noted to hydraulically reconnect the river to the oxbow to ensure a more consistent water supply to the area which would consequently result in a greater capacity to provide for improved overall habitat quality.

In 1995, a project consisting of multiple phases was completed to reconnect the oxbow to the main channel of the Missouri River and construct features to provide more reliable water levels. This plan was executed through the combined use of construction of a cross levee in order to

split LBSWA into two separate management areas, construction of water control structures to provide water level manipulation capability, and a pumping facility to provide a reliable source of water to meet water level management goals.

The constructed cross levee ran approximately 1,550 feet from Station 81 + 00 MR to the high bank and had an approximate elevation of 1,030 feet mean sea level (msl). It was a zoned embankment to assist in reducing the quantity of flow through the cross levee from one management area to the other.

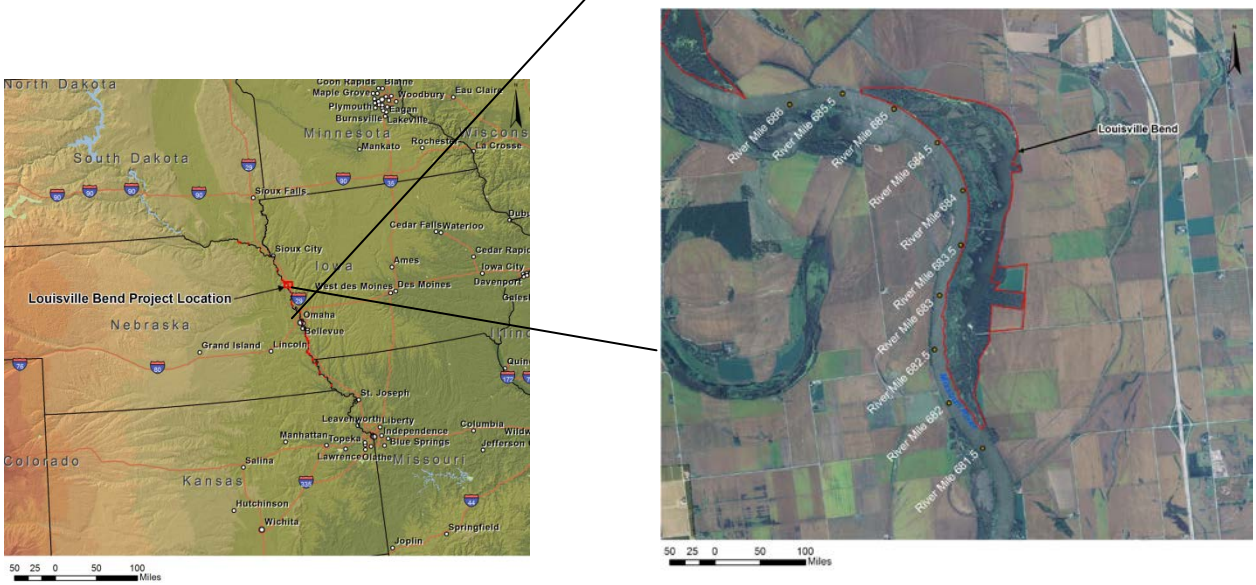


Figure 1. Project location in Monona County, Iowa, approximately 5 miles southwest of Onawa.

Two stop log water control structures were placed to manage water as well as allow for the movement of fish from the oxbow to the main channel. The structures were 5-foot wide by 3-foot high through the cross levee. The first structure was placed in the cross levee and controlled the flow of water from the upstream area to the downstream area. The second structure was placed downstream and controlled the water from the downstream area back to the Missouri River. The intake end of the water control structures was a concrete box with 6-foot crest length and a minimum length of 4 feet. One wall was made of aluminum stop logs in a slot. Conduit size was larger than necessary, but was created to enhance fish passage. Both structures were designed to pass 6,000 gallons of water per minute (gpm).

The pumping station was placed near the upstream end of the project area, located at Station 40 + 00 MR. It housed two, 3,000 gpm pumps designed to provide water to both upstream and downstream areas. Three-phase electrical distribution power existed approximately 7,500 feet from the pump station site and was extended directly to the pump station. The pump was controlled by an on/off switch in an aboveground cabinet. The pump was designed to discharge into an 18-inch pipe that had a flap valve on the discharge end to keep animals and trash from entering the pump when not running. A connectivity channel, approximately 5,900 feet long, was excavated to deliver water from the pump station to the oxbow.

IDNR's intention for the upper management area included pumping water into the area to provide 3 to 4 feet of water in the oxbow between March 1 and September 1 to create waterfowl nesting and brood rearing habitat. Additionally, croplands were flooded to depths of ½ to 2 feet and non-croplands were flooded to an average of 3 feet between September 1 and December 1 for feeding and loafing. From December 1 to March 1, water levels were regulated by the river stage. The primary goal of the lower management area was to provide deep water habitat for fisheries management and SWH for waterfowl management. This project was constructed prior to the issuance of the BiOp, and the overall goal of the original project was to enhance the area for waterfowl production and brood rearing and increase the ability to flood lowland areas and crop fields for feeding and nesting for migrating waterfowl. Secondary benefits included fish spawning and nursery areas.

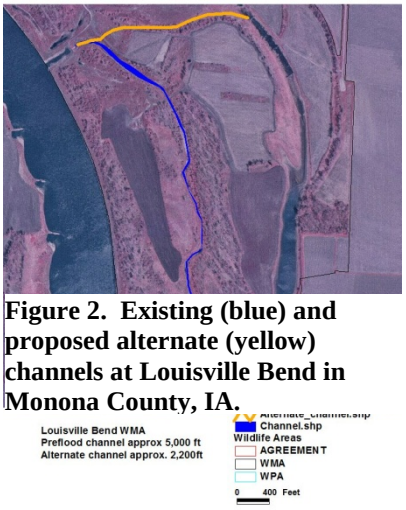


Figure 2. Existing (blue) and proposed alternate (yellow) channels at Louisville Bend in Monona County, IA.

The 2011 flood event deposited sediment in the connectivity channel (refer to photographs in Appendix D) that conveyed water from the pump station to the oxbow. The cross levee that separated the upper and lower management areas was overtopped by flood water, causing a breach, and the pump station was filled with flood deposited sediment (refer to Appendix D). The water control structures still remain functional.

During July of 2012, construction began at the downstream end of the LBSWA to remove some flood deposited sedimentation from the channel that connects the oxbow to the main channel of the Missouri River. This channel is the only way for fish to move between the oxbow and the main channel during normal flow conditions. Approximately 13,300 cubic yards (cy) of flood deposited material were removed from the channel. A hydraulic dredge was used to excavate the material and discharge it into the Missouri River. Project completion is expected in late spring/early summer of 2013.

2. PURPOSE AND NEED

The purpose of the proposed project is to restore the ability to deliver water from the pump station to the oxbow and to enhance the quality of the existing aquatic habitat in the oxbow for fish. The 2011 flood event deposited significant amounts of sediment in the original connectivity channel and pump station which eliminated the ability to deliver water from the pump to the oxbow. If the ability to pump water to the oxbow is not restored, water level management would suffer by reducing the ability to manipulate water levels of the oxbow independently from the water levels of main channel. Furthermore, it would remove the ability to flood the oxbow during early spring or late fall when river levels may be lower. As such, the quality of habitat in the oxbow would continue to degrade and it would lose its ability to support many of the fish and wildlife species that currently use this habitat.

In addition to restoring hydraulic connectivity, an opportunity to diversify and enhance habitat by creating a deep water overwintering pool was identified during project coordination discussions with IDNR. The construction of the deep pool would provide depth diversity and a

place for fish that prefer still water to survive over the winter when the river levels drop and the water begins to freeze. Overwintering habitat is thought to be a key habitat that is lacking within the channelized Missouri River by many of the state and federal fish and wildlife agencies. Incorporating depth diversity into aquatic habitat restoration projects would increase habitat quality, productivity and species diversity within the LBSWA.

3. ALTERNATIVES CONSIDERED

3.1 Alternative 1: No Action

Under the No Action Alternative, there would be no restored connectivity between the pump station and the oxbow, and there would be no ability to manipulate water levels within the oxbow other than through the use of the water control structures to trap water from runoff or high water events on the Missouri River. This would greatly decrease water level management capabilities and would not meet the purpose and need of the proposed project. The No Action Alternative would do nothing to fulfill the goal of restoring hydraulic connectivity and creating SWH in accordance with the BiOp. As a result, the LBSWA would begin to lose its value as prime migratory waterfowl habitat and habitat for a variety of other native fish and wildlife species.

3.2 Alternative 2: Excavation of the Original Channel Alignment and Creation of an Overwintering Hole

Under this alternative, depositional material would be removed from the originally constructed channel. This channel is 5,900 feet in length and would require excavation of approximately 60,000 cy of sediment (refer to Figure 2). The excavated channel would have a bottom width of 30 feet with 2 horizontal to 1 vertical (2:1) sideslopes. Additionally, an approximately 2.4-acre, 15-foot deep overwintering pool would be created near RM 683, in the downstream portion of the oxbow. Construction of this feature would require the excavation of approximately 65,000 cy of material (refer to Figure 3). The cost would be approximately $920,000.

Figure 3. Proposed overwintering hole located at Louisville Bend, IA near RM 683.

Excavation would be accomplished with either a hydraulic dredge or with mechanical equipment such as excavators and bulldozers. If a hydraulic dredge is used, the excavated material would be discharged into the Missouri River adjacent to the site. If excavation through mechanical means is used, the contractor will dispose of material at an off-site area approved by the Corps.

Sediment from the pump station would be removed by IDNR and functionality would be restored prior to construction.

3.3 Alternative 3: Excavation of a New Channel Alignment and Creation of an Overwintering Hole (Preferred Alternative)

Under this alternative, an entirely new channel would be created. The channel would be 2,700 feet in length near RM 684.4 and would require the excavation of approximately 30,000 cy of material (refer to Figure 2). As in Alternative 2, the excavated channel would have a bottom width of 30 feet with 2:1 sideslopes. The overwintering hole would be constructed as described in Alternative 2 (refer to Figure 3). The cost would be approximately $740,000 and this alternative would be constructed in the same manner as described in Alternative 2 above. Also, as in Alternative 2, IDNR would remove sediment from the pump station and restore functionality prior to construction.

4. ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

4.1 Alternative 2: Excavation of the Original Channel Alignment and Creation of an Overwintering Hole

Alternative 2 was eliminated from further consideration because it would provide no additional habitat gain, and it would cost more money to construct than Alternative 3. It is more economically feasible to create a shorter channel because less material would have to be excavated and the project would still meet the overarching goals of the original project.

5. ALTERNATIVES CARRIED FORWARD FOR FURTHER CONSIDERATION

5.1 Alternative 1: No Action

Alternative 1 was carried forward for further consideration because the No Action Alternative provides a benchmark against which to evaluate the impacts of the action alternative. According to analysis of the February 1993 DPR, it was determined there were approximately 18 existing acres of depths of 3 feet or less (SWH) and no inundated acres of depths between 3 and 7 feet in the upstream area. The downstream area, prior to original project construction, had approximately 28 existing SWH acres and approximately 4 inundated acres of depths between 3 and 7 feet. Since Alternative 2 of the 1993 DPR was implemented, it was approximated that if a water supply from the pump station to the oxbow was created, the upstream area would have gained approximately 72 SWH inundated acres and approximately 45 inundated acres of depths between 3 and 7 feet. The downstream management area would have potentially gained approximately 32 inundated acres of SWH and approximately 71 inundated acres of depths between 3 and 7 feet. The entire oxbow potentially gained 104 total acres that can be classified as SWH from the original project and if the No Action Alternative is implemented there is potential to lose these 104 acres of SWH. These calculations are based on 1993 acre quantities that existed prior to the construction of the original 1995 project.

5.2 Alternative 3: Excavation of a New Channel Alignment and Creation of an Overwintering Hole

Alternative 3 was carried forward for further consideration because excavation of a new flow path from the pumping station would provide connectivity to the water features present on this site with considerably less construction costs than that of Alternative 2. Re-establishing hydrological connections with Missouri River floodplain is imperative to gain valuable habitat

lost from channelization. Reconnection sites should allow for annual flooding in order to mimic historic behaviors of the river (Hesse & Sheets, 1993).

Wetland areas such as LBSWA are effective in retaining water and providing suitable habitat for migratory waterfowl. The ability to manipulate water levels has long been a tool for ecologists to manage appropriate habitat for waterfowl. Utilizing seasonal drawdown and inundation methods support food production and availability for many species of migratory waterfowl (Gruenhagen & Fredrickson, 1990).

Furthermore, because fluvial dynamics of the Missouri River have been altered through anthropogenic means, primarily as a result of the construction and implementation of the BSNP, wetlands have been drastically altered. The importance of main channel connectivity to oxbows and seasonal floodplain lakes is imperative for fish assemblages. The ability to predict patterns can increase the ability to more properly manage for species of interest (Miranda, 2005).

In addition, by creating an overwintering pool for fish, depth diversity is being added to the habitat, increasing overall habitat variability and quality. Increased habitat quality and variability is often indicative of a healthy ecosystem. The deep pools provide depth diversity which serves many vital functions throughout all seasons. In the summer, varying depths provide quality habitat which enhances and increases the diversity of fish species, communities and different age classes. In the winter, depth provides refuge from low water levels and decreased temperatures (Rabeni, 1990).

6. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The majority of the current resources within the affected environment at Louisville Bend are essentially the same as those that existed prior to construction of the original project as documented in the original 1993 DPR and are incorporated by reference. Those resources are prime farmland, fluvial characteristics, terrestrial/wetland resources, historic properties, socio-economic resources, recreation, and aesthetics. Those resources that have experienced change, or for which new information is available are listed below.

Environmental consequences have been integrated with the affected environment to show the degree of potential impact to individual resources; these impacts may either be positive or negative in nature in regards to the differing proposed alternatives.

6.1 Physiography/Topography

The LBSWA is part of the central lowlands of the interior plains located within the floodplain of the Missouri River and is relatively flat with an elevation of approximately 1,050 feet msl. The Missouri River borders approximately 2 miles of the western side of the LBSWA. As part of the BSNP, to maintain the navigation channel, 16 dike structures were constructed on the left bank as well as a series of six dikes and a revetment along the majority of the length of the right bank within this 2-mile reach. Siltation and sedimentation are occurring behind these dikes. The current physiography and topography of the proposed project area has been slightly altered since the project was last constructed in 1995 due to flood deposition in the connectivity channel and the floodplain.

6.1.1 No Action

Under the No Action Alternative, no construction would take place. The land would not change with any regards to physiography or topography except that of natural processes. The LBSWA would continually degrade as water level management could not be conducted and the bed of the adjacent Missouri River continues to degrade which would further isolate the LBSWA from the influences of water levels in the main channel.

6.1.2 Alternative 3 (Preferred Alternative)

Changes in elevation would occur with the construction of the new connectivity channel, as the proposed project requires replacing upland habitat with channel habitat which would allow for water level manipulation in order to maximize benefits to fish and wildlife at the LBSWA. The hydraulic connection would be restored from the pump station to the oxbow. There would be no significant adverse effects on the physiography and topography of the area by implementing the preferred alternative.

6.2 Water Quality

The water quality of the entire LBSWA and corresponding oxbow is consistent with the main channel of the Missouri River. Hydrology is provided by the direct connection to the Missouri River at the downstream end of the oxbow, direct precipitation, overland flow and groundwater, which is hydraulically linked to the Missouri River. Water quality concerns in the proposed project area center around high summer water temperatures, sedimentation and low dissolved oxygen associated with lack of adequate water depth in the oxbow due to the amount of sediment deposited during the 2011 flood.

6.2.1 No Action

Under the No Action Alternative, no construction or the associated discharge of dredged material would take place at the proposed project site. The water quality would continue to deteriorate as there would be no way to restore and manipulate the hydrology at the LBSWA. Habitat benefits realized prior to the 2011 flood would continue to deteriorate and would eventually have no value to the migratory waterfowl that the original project was created to provide. Pallid sturgeon and other native Missouri River fishes would not benefit either since no SWH creation would take place, and the existing SWH would continually degrade (see Section 5.1).

6.2.2 Alternative 3 (Preferred Alternative)

Discharged material would temporarily affect water quality for a short distance downstream of the discharge pipe. Dredged material would be at the highest concentration level at the discharge point. Water turbidity would temporarily increase during construction. As the discharged material moves downstream of the pipe, the heavier material would settle to the bottom and suspended sediment and turbidity would rapidly decrease to ambient conditions. Based on the size of the proposed channel at Louisville Bend, and past experience from other dredging projects, it is likely that the size of the intake on the dredge would be between 8 and 18 inches. The calculated discharge rate for an 8-inch dredge would be approximately 7 cfs, and the approximate discharge rate for an 18-inch dredge would be approximately 35 cfs. Based on these discharge rates, the dredge would be expected to contribute between .0002% and .001% of the Missouri River flow at a Missouri River discharge rate of 34,800 cfs. Therefore, the

contribution of dredged material to the Missouri River would be insignificant compared to the amount of flow in the river.

The Corps has determined that the proposed dredging activities at Louisville Bend fit the requirements for the use of Regional General Permit (RGP) 11-02 (see Appendix C). This RGP was developed to provide guidance for projects occurring in Nebraska and Iowa that help recover from flood damages that occurred as a result of the 2011 flood on the Missouri River. This permit authorizes 11 pre-defined activities for reconstruction and repair work for flood damaged areas (refer to Appendix C) which include the restoration of channels to their pre-flooding alignment and capacity and also allows in-stream disposal of flood deposited material up to 100,000 cy per activity.

This RGP was developed in cooperation with multiple state and federal agencies. In addition, the Nebraska Department of Environmental Quality (NDEQ), IDNR, and the Environmental Protection Agency (EPA) have all issued Section 401 Water Quality Certification for this RGP. The proposed project at Louisville Bend would remove approximately 95,000 cy of flood deposited material from a previously constructed backwater channel. This activity would meet the RGP 11-02 general permit conditions. No long-term consequences to water quality are expected, and the discharge would not pose an adverse impact to human health or wildlife.

6.3 Air Quality

Most air pollutants in the LBSWA consist of suspended particles from agricultural activities. The only source of pollutant that originates from the LBSWA itself is agricultural activities which are done on a seasonal basis. There is very little industry and therefore no industry-related air pollution in Monona County. The average daily measure of fine particulate matter in micrograms per cubic meter is 9.4 (PM9.4) in Monona County. The average for the state of Iowa is PM10.3 while the national benchmark is PM8.8. Monona County has received an overall ranking of 6 out of 99 (the smaller number being optimal) in the physical environment category, according to the Iowa Counties Public Health Association (2013) and is considered in attainment of air quality regulations, meaning there are no ozone pollution problems, by the EPA (Regulatory Resource Center, n.d.).

6.3.1 No Action

Under the No Action Alternative, no construction would take place; thus, no impacts to air quality would occur. The ambient air levels would remain static and only be affected by processes already occurring in the adjacent area, such as agricultural practices.

6.3.2 Alternative 3 (Preferred Alternative)

Excavation of a new connectivity channel and the deep pool would cause temporary and minor impacts to local air quality in the form of increased particulate matter (dust and exhaust). After construction, air quality would revert to pre-construction conditions. As such, the proposed project would not cause significant impacts to air quality.

6.4 Noise

Current sources of noise in the proposed project area are from adjacent land that is utilized for agricultural practices. Seasonal noise also occurs from occasional barges and motorboats on the Missouri River and from recreational activities such as hunting.

6.4.1 No Action

Under the No Action Alternative, no construction would take place; thus, no noise impacts would occur.

6.4.2 Alternative 3 (Preferred Alternative)

Minor increases in noise from construction equipment are expected at the project site during construction activities. Best management practices, such as avoiding idling construction equipment when not immediately needed, would be implemented to reduce noise impacts. Temporary noise from pumps and adjustments to stop logs would occur to provide habitat to migrating birds, however, this would be done in advance of their arrival. Noise from future maintenance, as required, would occur, but be minimized.

6.5 Fish

Channelization of the Missouri River has constricted the channel, modified flooding patterns, isolated the floodplain from the main channel and increased water velocities in the river according to Fredrickson and Reid(as cited in USACE, 1993). In its natural state, the Missouri River provided habitat for a diversity of fish species as it contained a variety of microhabitats to include chutes, backwaters, pools and oxbows in addition to the main channel. The Missouri River fishery has been severely impacted by the loss of water surface area as well as the decline in a variety of microhabitats.

Fish likely to be present in the proposed project area, as defined by the 1993 DPR, consists of a diversity of native species, such as river carpsucker (*Carpiodes carpio*), gizzard shad (*Dorosoma cepedianum*), bigmouth buffalo (*Ictiobus cyprinellus*), blue sucker (*Cycleptus elongatus*), catfish, gar, goldeye (*Hiodon alosoides*), and several species of minnow. Additionally, species of special concern, such as the endangered pallid sturgeon and the state endangered lake sturgeon (*Acipenser fulvescens*) have the potential to occur at or near the proposed project location (refer to Sections 6.6.3 and 6.6.4).

6.5.1 No Action

Under the No Action Alternative, no water level manipulation would occur, which in turn would lead to a reduced quality and quantity of aquatic habitat in the upstream and downstream management areas that would continually degrade. The area may still provide some benefits to fish at the downstream end during high water events when there is a connection between the oxbow and the river and may still remain conducive to generalist species or undesirable species; however, this would provide no benefits to targeted aquatic resources and the purpose and need of the project would not be accomplished.

6.5.2 Alternative 3 (Preferred Alternative)

With construction of the proposed project, fish would be temporarily displaced from the downstream end of the project area during the deep pool construction but would return to the

area soon after construction is completed. Minor increases in turbidity are expected to occur (refer to Section 6.2.2) at the discharge pipe and near the cutter head, but native fish of the Missouri River have adapted to turbid conditions that existed prior to dam construction and the BSNP.

The temporary disturbance to fish is not considered significant. Following construction, the diversity of aquatic habitat associated with the project would provide for the needs of many different species of fish. Feeding, breeding, and sheltering habitats for numerous species would be re-established. The proposed action would have beneficial effects for native species associated with this type of aquatic habitat.

6.6 Species of Special Concern

The original 1993 DPR was referred to for federally-threatened and endangered species records in the proposed project area, and species still believed to potentially occur in the area are brought forward for further analysis. State-listed species and species of special concern were provided by IDNR. It was noted that the federally-threatened piping plover and interior least tern may utilize the LBSWA, though there are no previously documented cases in Monona County.

Additionally, the ornate box turtle (*Terrapene ornata*) and the least shrew (*Cryptotis parva*) are both currently listed state threatened but according to IDNR, are not likely to be in the area, as the last observations made by IDNR were in 1971 and 1981 respectively (refer to Appendix B). Listed below are endangered, threatened or of special concern species determined to be potentially impacted by the proposed project.

6.6.1 Bald Eagle

Upon the completion of the original project at LBSWA in 1995, the bald eagle (*Haliaeetus leucocephalus*) was federally listed as a threatened species under the Endangered Species Act (ESA). The bald eagle was listed in 1973, though they were officially declared as endangered prior to the ESA in 1967. On August 9, 2007, the bald eagle was removed from the federal list of threatened and endangered species but continues to be protected under the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and Lacey Act - 16 U.S.C. § 701, May 25, 1900. Bald eagles are known to inhabit forested areas along the Missouri River. These birds tend to construct their nests in mature trees near aquatic habitats, especially in cottonwood trees. Bald eagle nests are typically easy to identify due to their large size and their height (they can be eight feet or more in diameter and 12 feet or more in height). They feed primarily on fish and crippled waterfowl, but may feed on upland game birds and other birds, carrion, and small rodents.

6.6.1.1 No Action

Under the No Action Alternative, no excavation would take place, thus no impacts to the bald eagle would occur.

6.6.1.2 Alternative 3 (Preferred Alternative)

Because bald eagles are a riparian associated species, they are known to utilize the trees along the riverbank in the proposed project area. Currently, there are no known nest sites within 660 feet of the proposed project area. This buffer zone has been designated by the USFWS as a

protection area to active nests. Care will be taken to minimize any impact to this species, prior to construction a nest survey would be conducted. If a new nest is located within 660 feet of the proposed project area, no construction would take place within the buffer zone. If a nest is discovered after construction has begun, construction would immediately stop until the young eagles fledge or the adult eagle has abandoned its nest.

6.6.2 Migratory Birds

All federal agencies are subject to the provisions of the Migratory Bird Treaty Act (16 U.S.C. 703-711) which regulates the take of any migratory bird species. If a Corps project is expected to impact any migratory bird species, coordination with the USFWS is typically initiated in order to minimize impacts to these species. According to the USFWS, most migratory songbirds along the Missouri River in Nebraska and Iowa nest between April 1 and July 15. Raptors generally nest earlier than other birds, and their primary nesting period is between February 1 and July 15. Some other birds nest later in the year between July 15 and September 10.

6.6.2.1 No Action

Under the No Action Alternative, no channel excavation and consequent clearing and grubbing would take place, thus no adverse impacts would occur. However, the original project at the oxbow was developed in part to accommodate waterfowl and migratory birds. During migration season, the area would attract a variety of ducks, geese, shorebirds, raptors, songbirds, and neotropical migrants. Without the ability to manipulate water levels and seasonally flood the area, previous benefits would be lost.

6.6.2.2 Alternative 3 (Preferred Alternative)

Any clearing and grubbing would take place outside of the primary nesting period. Construction may temporarily disrupt migratory species from utilizing the area, but upon project completion species would return to the area.

6.6.3 Pallid Sturgeon

The pallid sturgeon is federally endangered. Because pallid sturgeon are main channel obligates, there likely was little use of the oxbow by adult pallid sturgeon after it was reconnected to the main channel in 1995, except for, perhaps the area downstream of the downstream water control structure. However, SWH, such as the downstream management area of the oxbow, are critical refuge areas for larval pallid sturgeon. During larval drift, it is hoped a certain amount of larvae become entrained in these SWH areas, as these habitats provide favorable conditions until exogenous feeding can occur (Wildhaber et al., 2007). This downstream area of the oxbow may be used by adult pallid sturgeons for foraging grounds as SWH is a highly productive habitat that provides an ample source of fish and invertebrates that pallid sturgeons feed on. The oxbow likely provides both direct and indirect benefits to the species.

6.6.3.1 No Action

Under the No Action Alternative, habitat quality would be degraded and a significant amount of SWH acreage would be lost in both the upstream and downstream management areas, potentially 104 acres of SWH could be lost (refer to Section 5.1).

6.6.3.2 Alternative 3 (Preferred Alternative)

This proposed project could provide habitat needed to support components of the ecosystem that are thought to be vital to the pallid sturgeon. The primary food eaten by the pallid sturgeon includes mostly aquatic invertebrates, principally early life stages of insects, and fish (USFWS, 1993). It is anticipated that habitat restored by this project would lead to increased primary and secondary production, thus increasing production of aquatic invertebrates and minnow species at the site for eventual consumption by the pallid sturgeon adults.

Though there is no evidence of any current pallid sturgeon at the oxbow, the last noted observation by IDNR was in 2008; there is potential of this species to receive secondary benefits provided by this habitat as mentioned above. It is important to note that there is a slight risk of entrainment while dredging the deep pool, however the USFWS has permitted incidental take for pallid sturgeon for all SWH creation projects based on the premise that implementing the RPA in the BiOp has the greatest chance to recover the species.

6.6.4 Lake Sturgeon

The lake sturgeon is currently listed as state endangered and shares similar habitat preferences as that of the pallid sturgeon. Lake sturgeon are endemic to the Great Lakes basin and connecting waters and it is thought that due to early over-fishing, populations began to decline. When commercial fishing closed in the early 1900's the lake sturgeon struggled with recruitment as individuals do not reach sexual maturity until 10-20 years of age. Additionally, loss of habitat contributed to species decline, siltation from forest removal cut off access to spawning habitat, dams and mills blocked migration routes, and channelization of the large rivers restricted movement (Auer, 1996). There have been no observations of lake sturgeon in Monona County by IDNR (refer to Appendix B).

6.6.4.1 No Action

Under the No Action Alternative, no construction would take place, therefore no impacts to the lake sturgeon would occur. However, as with other fish species and aquatic resources, no potential benefit would exist for this species as the habitat diversity once associated with the proposed project area would continue to degrade and not be advantageous to species of concern that are historically adapted to specialized habitats of the natural Missouri River.

6.6.4.2 Alternative 3 (Preferred Alternative)

While this species is not thought to exist in the proposed project area, there is a slight risk of entrainment associated with the use of a hydraulic dredge. Best efforts will be used to avoid negative impacts to this species resulting from excavation activities.

6.7 Cultural Resources

A cultural resources literature search and a reconnaissance survey of Louisville Bend were conducted in consultation with the Iowa State Historic Preservation Office (SHPO) prior to construction of the original backwater project in 1995. A February 2013 database search confirmed that no historic properties are recorded in the project Area of Potential Effect (APE). One reported historic shipwreck location is recorded within the one-mile radius. The sternwheeler *Jacob Sass* was "a total loss."

6.7.1 No Action
Under the No Action Alternative, no impacts to cultural resources would occur.

6.7.2 Alternative 3 (Preferred Alternative)
As the proposed work will take place in an area of accreted soils previously cleared for the original project, the Omaha District believes the current work will have No Effect to Historic Properties. In the unlikely event of an unanticipated discovery of cultural resources, work will halt immediately and the District archeologist will be contacted. The discovery will be examined by a qualified archeologist, who will determine whether the site requires consultation with the appropriate SHPO.

6.8 Recreation
The LBSWA provides various recreational opportunities, such as fishing, hiking, hunting, birding, and wildlife photography and observation.

6.8.1 No Action
Under the No Action Alternative, no construction would take place in the project area, thus there would be no impacts to recreation. However, intrinsic and atheistic value may be lost to the area as it would transition into a degraded habitat which would result in less biodiversity and lower numbers of fish and wildlife in the area.

6.8.2 Alternative 3 (Preferred Alternative)
The construction may temporarily disrupt some of these activities at the project site, and additionally, there will be closures and restrictions to the area in and around the project location. However, after completion of the project, the area would re-open with no expected long term adverse effects. In fact, some recreation activities such as fishing and waterfowl hunting may improve after restoring hydraulic connection as there could be potential increase in fish use of the area.

7. CUMULATIVE IMPACTS
The combined incremental effects of human activity are referred to as cumulative impacts (40CFR 1508.7). While these incremental effects may be insignificant on their own, accumulated over time and from various sources, they can result in serious degradation to the environment. The cumulative impact analysis must consider past, present, and reasonably foreseeable actions in the study area. The analysis also must include consideration of actions outside of the Corps, to include other state and federal agencies. As required by NEPA, the Corps has prepared the following assessment of cumulative impacts related to the alternative being considered in this Supplemental EA.

Substantial cumulative impacts have occurred throughout the Missouri River, which likely contributed to the decline of federal and state listed threatened and endangered species known to occur within and along the Missouri River. Anthropogenic alteration of the river hydrographs and dynamic processes has resulted in dramatic changes, and the loss of properly functioning conditions.

In 1995, through a 5,900-foot connectivity channel, water supply was restored to the oxbow by way of a pump station. Additionally, water level manipulation capabilities were enhanced through water control structures and a cross levee. By having the ability to independently manage water levels of the oxbow from the main channel, waterfowl, shorebirds and other aquatic and semi-aquatic species benefited. Overall, the supplemental action would reinstate the existing intention by reconnecting the areas. Although this individual project would not restore all natural processes lost, halt the decline of species of interest, or substantially improve habitat along the entire Missouri River; it does have the potential to provide some incremental cumulative benefits to the Missouri River ecosystem. When the benefits of this project are combined with those of other Missouri River Mitigation Project successes, this project likely has beneficial impacts to fish and wildlife species along the river, and incrementally reduces the adverse cumulative effects that have already occurred.

8. COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

American Indian Religious Freedom Act (AIRFA) of 1978, 42 U.S.C. 1996. *In compliance*. AIRFA protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. The Louisville Bend project would not adversely affect the protections offered by this act. Access to sacred sites by Tribal members would not be affected as no sacred sites are located at the proposed project area.

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 669a-668d. *In compliance*. This act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions for the scientific or exhibition purposes, for religious purposes of Indian Tribes, or for the protection of wildlife, agriculture or preservation of the species. The proposed project would have no adverse effects on the bald eagle (see Section 6.6.1).

Clean Air Act, as amended, 42 U.S.C. 185711-7. et seq. *In compliance*. The purpose of this act is to protect public health and welfare by the control of air pollution at its source and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for states to attain, or maintain. Some temporary emissions may occur during construction activities; however, air quality is not expected to be significantly impacted to any measurable degree by the supplemental action.

Clean Water Act, as amended, (Federal Water Pollution Control Act), 33 U.S.C. 1251, et seq. *In compliance*. The objective of this act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 U.S.C. 1251). The Corp regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. The permitting authority applies to all waters of the United States including navigable waters and wetlands. The selection of disposal sites for dredged or fill material is done in accordance with the Section 404(b)(1) guidelines, which were developed by the U.S. Environmental Protection Agency (see 40 CFR Part 230). A Regional General Permit 11-02 with an integrated 401 certification (see Appendix C) has been authorized for this project as total excavated quantities fall under the 100,000 cy limit. Additionally, this permit allows for the in-stream disposal of flood-deposited material.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA). *In compliance.* Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. This project will not involve any real estate transactions.

Endangered Species Act, as amended, 16 U.S.C. 1531, et seq. *In compliance.* Section 7 (16 U.S.C. 1536) states that all federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior, ensure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical. This project has been coordinated with the USFWS. A letter dated February 19, 2013, was sent to the USFWS stating that the proposed project consisted of recreating habitat previously constructed and altered by the 2011 flood event. In a response e-mail from the USFWS, dated March 25, 2013, the USFWS stated it had no objections to the proposed project (refer to Appendix B).

Environmental Justice (E.O. 12898). *In compliance.* Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The project does not disproportionately impact minority or low-income populations.

Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981), effective August 6, 1984. *In compliance.* This act instructs the Department of Agriculture, in cooperation with other departments, agencies, independent commissions, and other units of the federal government, to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. This project will have no significant effect on prime farmland soils. A letter dated February 19, 2013 was sent to the Natural Resources Conservation Service (NRCS) soliciting comment on the project and asking if any prime farmland occurred in the area. In a response letter, dated March 18, 2013, an area of prime farmland was identified in the area, however, construction would not be taking place in this area (refer to Appendix B).

Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq. *In compliance.* The act establishes the policy that consideration be given to the opportunities for outdoor recreation and fish and wildlife enhancement in the investigating and planning of any federal navigation, flood control, reclamation, hydroelectric or multi-purpose water resource project, whenever any such project can reasonably serve either or both purposes consistently. The purpose of this project can be considered fish and wildlife enhancement and it will not negatively impact recreational use of the river.

Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq. *In compliance.* A letter dated February 19, 2013, was prepared by the Corps of Engineers and sent to the USFWS and IDNR to

solicit comment on the proposed project. Both agencies stated that they had no objections to the proposed project. No further action under the Fish and Wildlife Coordination Act is required.

Floodplain Management (E.O. 11988). *In compliance*. E.O. 11988 requires federal agencies provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. These requirements apply in carrying out responsibilities for 1) acquiring, managing, and disposition of federal lands and facilities; 2) providing federally-undertaken, financed, or assisted construction and improvements; and 3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. This project has been reviewed by the Omaha District Flood Risk and Floodplain Management Section and will not adversely affect the flood holding capacity or flood surface profiles of any stream, as such the project is in compliance with the requirements of E.O. 11988.

Land and Water Conservation Fund Act (LWCFA), as amended, 16 U.S.C. 4601-4601-11, et seq. *Not applicable*. Planning for recreation development at Corps projects is coordinated with the appropriate states so that the plans are consistent with public needs as identified in the State Comprehensive Outdoor Recreation Plan (SCORP). The Corps must coordinate with the National Park Service (NPS) to ensure that no property acquired or developed with the assistance from this act will be converted to other than outdoor recreation uses. If conversion is necessary, approval of NPS is required, and plans are developed to relocate or re-create affected recreational opportunities. No lands involved in the proposed project were acquired or developed with LWCFA funds.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq. *In compliance*. The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the act. The Corps would not impact migratory birds or their nests during construction of the proposed project by avoiding critical timeframes for project implementation.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq. *In compliance*. This supplemental environmental assessment has been prepared for the proposed action and to satisfy the NEPA requirement. An Environmental Impact Statement is not required.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq. *In compliance*. No cultural resources were found to occur in the proposed project area. There is always potential for an unanticipated discovery of cultural resources during construction activities. In the event that historic resources are uncovered, work would be halted immediately and a District

archeologist would be notified. The work would not be continued until the area is inspected by a staff archeologist. If he or she determines that the resources require further consultation, he or she will notify the Iowa State Historic Preservation Office.

Noise Control Act of 1972, 42 U.S.C. 4901, et seq. *In compliance*. While there will be an initial noise disturbance during construction, there will be no long-term noise disturbances associated with this project.

North American Wetlands Conservation Act, 16 U.S.C. Sec. 4401, et seq. *Not applicable.* This act establishes the North American Wetlands Conservation Council (16 U.S.C. 4403) (NAWCC) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the act (16 U.S.C. 4408) addresses the restoration, management, and protection of wetlands and habitat for migratory birds on federal lands. Federal agencies acquiring, managing, or disposing of federal lands and waters are to cooperate with USFWS to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their mission and statutory authorities. This project does not involve federal lands.

Protection of Wetlands (E.O.11990). *In compliance*. Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies' responsibilities. According to the 1987 National Wetlands Inventory Map, the proposed project area is composed predominantly of PEMA (palustrine emergent temporary flooded), PEMC (palustrine emergent seasonally flooded), and PSSC (palustrine scrub/shrub seasonally flooded) wetlands. However, the habitat types may have changed due to flood deposition. No adverse impacts to wetlands would occur with implementation of the preferred alternative.

Rivers and Harbors Act, 33 U.S.C. 401, et seq. *In compliance*. This act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. A Section 10 permit is not required for Corps projects.

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq. *In compliance*. This act authorizes the Secretary of Agriculture to cooperate with states and other public agencies in works for flood prevention and soil conservation, as well as the conservation, development, utilization and disposal of water. This act imposes no requirements on Corps Civil Works projects.

Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, et seq. *Not applicable.* This act establishes that certain rivers of the Nation, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future

generations. The area in which the proposed activity would occur is not designated as a wild or scenic river, nor is it on the National Inventory of Rivers potentially eligible for inclusion.

9. LITERATURE CITED

Auer, N.A. 1996. Importance of habitat and migration to sturgeons with an emphasis on lake sturgeon. Canadian Journal of Fisheries and Aquatic Sciences. 53(S1):152-160.

Bailey, R.M. and F.B. Cross. 1954. River sturgeons of the American genus *Scaphirhynchus*: characters, distribution, and synonymy. Papers of the Michigan Academy of Science, Arts, and Letters. 39:169-208.

Bramblett, R.G. and R.G. White. 2001. Habitat use and movements of pallid and shovelnose sturgeon in the Yellowstone and Missouri Rivers in Montana and North Dakota. Transactions of the American Fisheries Society. 130(6):1006-1025.

Fredrickson, L.H. and F.A. Reid. 1990. Impacts of hydrologic alteration on management of freshwater wetlands. Pages 71-91 in J.M. Sweeney, ed. Management of dynamic ecosystems. North Cent. Sect. Wildlife Society, West Lafayette, IN.

Gruenhagen, N.M. and L.H. Fredrickson. 1990. Food use by migratory female mallards in northwest Missouri. The Journal of Wildlife Management. 54(4):622-626.

Hesse, L.W. and W. Sheets. 1993. The Missouri River hydrosystem. Fisheries. 18(5):5-14.

Hof, J., C.H. Sieg, M. Bevers. 1999. Spatial and temporal optimization in habitat placement for a threatened plant: the case of the western prairie fringed orchid. Ecological Modelling, 115, 61-75.

Iowa Counties Public Health Association. 2013. County health rankings and roadmaps: Monona County. http://www.countyhealthrankings.org/app#/iowa/2013/monona/county/outcomes /overall/snapshot/by-rank. April 18, 2013.

Keenlyne K.D. and L.G. Jenkins. 1993. Age at sexual maturity of the pallid sturgeon. Transactions: American Fisheries Society. 122(3):393-396.

Miranda, L.E. 2005. Fish assemblages in oxbow lakes relative to connectivity with the Mississippi River. Transactions of the American Fisheries Society, 134:6, 1480-1489.

Regulatory Resource Center. Air regulations. http://www.pmairegs.com/air/regs.php?k=827. April 18, 2013.

USACE (U.S. Army Corp of Engineers). 1993. *Louisville Bend State Wildlife Area Fish and Wildlife Habitat Rehabilitation, Final Definite Project Report with Integrated Environmental Assessment and Section 404(b)(1) Evaluation, Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project, Monona County, Iowa, February 1993*. 1993.

USFWS (U.S. Fish and Wildlife Service). 1993. Pallid sturgeon (*Scaphirhynchus albus*) recovery plan. Department of the Interior, U.S. Fish and Wildlife Service. http://www.fws.gov/yellowstonerivercoordinator/pallid%20recovery%20plan.pdf. April 16, 2013.

USFWS. 2000. Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System. Denver, Colorado and Fort Snelling, Minnesota.

USFWS. 2003. 2003 Amendment to the 2000 Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System. Denver, Colorado and Fort Snelling, Minnesota. http://www.moriverrecovery.org/mrrp/f?p=136:6:0

Wildhaber, M.L., A.J. DeLonay, D.M. Papoulias, D.L. Galat, R.B. Jacobson, D.G. Simpkins, P.J. Braaten, C.E. Korschgen, and M.J. Mac. 2007. A conceptual life-history model for pallid and shovelnose sturgeon. U.S. Geological Survey Circular 1315. 18 p.

10. PREPARER

This Supplemental EA and the associated Finding of No Significant Impact (FONSI) were prepared by Ms. Rebecca Bozarth, Environmental Resource Specialist. The address of the preparer is: U.S. Army Corps of Engineers, Omaha District; PM-AC, 1616 Capitol Avenue, Omaha, Nebraska 68102.

Prepared By: _____ Date: _____
Rebecca Bozarth
Environmental Resources Specialist

Reviewed By: _____ Date: _____
Luke Wallace
Environmental Resources Specialist

Approved By: _____ Date: _____
Eric Laux
Acting Chief, Environmental Resources and Missouri River Recovery Program Plan Formulation Section

Appendix A

Project Maps and Specifications

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4


PUMP STATION
LIMITS OF EXCAVATION
C0.01

Appendix B

Agency Coordination

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4

May 2013

Iowa Tribe of Kansas and Nebraska
3345 B Thrasher Road
White Cloud, KS 66094
(785) 595-3258 or (785) 595-3259
Fax: (785) 595-6610

March 1, 2013

received
6 Mar 13

Department of Army
Corps of Engineers, Omaha District
1616 Capital Avenue
Omaha, NE 68102-4901

Subject: **Proposed Rehabilitation of a Constructed Wetland Complex and Enhancement of Existing Shallow Water Habitat (SWH) at the Louisville Bend State Wildlife Area (LBSWA) Located in Monona County, Iowa**

To Whom It May Concern:

Thank you for your correspondence dated February 19, 2013 concerning the subject projects:

- [x] Copy of SHPO or Archeologist's Report Requested.
- [ ] No interest in the area geographically.
- [ ] No comments or objections to the proposed project at this time.
- [x] No objections to the project as proposed, if cleared through the SHPO. We wish to be notified if any Sec. 106 consultations are requested, any new historical/cultural properties are discovered, and if any Adverse Effects are reported. If human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, please stop immediately and notify this office.
- [ ] An objection requires additional project information. Please submit the following:

Sincerely,

F. Martin Fee
Tribal Historic Preservation Officer

Eric → Laux

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
210 Walnut Street, Room 693
Des Moines, IA 50309-2180

March 18, 2013

Mr. Eric Laux
Acting Chief
Environmental Resources and Missouri River
Recovery Program Plan Formulation Section
Department of the Army
Corps of Engineers, Omaha District
1616 Capital Avenue
Omaha, Nebraska 68102-4901

RE: Louisville Bend State Wildlife Area (LBSWA) Project

Dear Mr. Laux:

Attached is a soil map and information on Prime Farmland for the Louisville Bend State Wildlife Area (LBSWA) Project. There is Prime Farmland located within the LBSWA boundary located in Monona County, Iowa, and Burt County, Nebraska.

The Natural Resources Conservation Service (NRCS) has no easements in the LBSWA.

If you have any questions, please contact Rick Bednarek, State Soil Scientist, at [redacted] or [redacted].

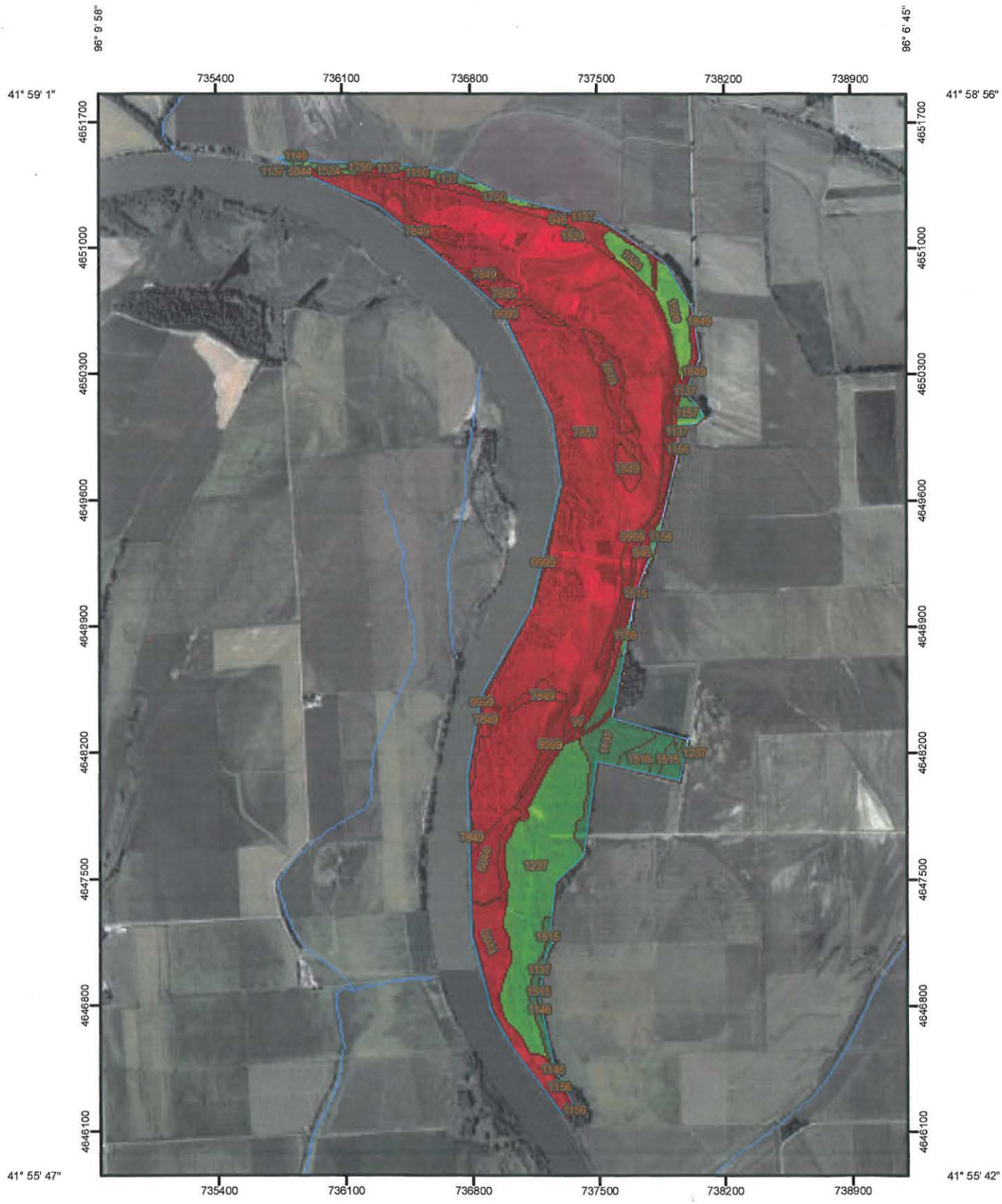
Sincerely,

Jay T. Mar, Acting
Jay T. Mar
State Conservationist

Enclosures

cc: Rick Bednarek, State Soil Scientist, NRCS, Des Moines, Iowa

Farmland Classification—Burt County, Nebraska, and Monona County, Iowa
(LBSWA)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:28,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Burt County, Nebraska
Survey Area Data: Version 11, Jul 27, 2012

Soil Survey Area: Monona County, Iowa
Survey Area Data: Version 23, Aug 22, 2012

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 7/19/2006; 9/13/2006; 9/26/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — Burt County, Nebraska (NE021)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
7849	Sarpy fine sand, 0 to 6 percent slopes, occasionally flooded	Not prime farmland	43.8	5.0%
7857	Sarpy-Grable variant complex, occasionally flooded	Not prime farmland	477.3	54.2%
9999	Water	Not prime farmland	32.7	3.7%
Subtotals for Soil Survey Area			**553.8**	**62.8%**
Totals for Area of Interest			**881.2**	**100.0%**

Farmland Classification— Summary by Map Unit — Monona County, Iowa (IA133)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
946	Albaton silty clay, depressional, undrained, 0 to 1 percent slopes, frequently flooded	Not prime farmland	42.4	4.8%
1137	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	44.0	5.0%
1146	Onawa silty clay, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	1.6	0.2%
1147	Modale silty clay loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	0.1	0.0%
1150	Modale silt loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	1.3	0.2%
1156	Albaton silty clay, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	5.3	0.6%
1157	Albaton silt loam, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	4.6	0.5%
1237	Sarpy loamy fine sand, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	102.0	11.6%
1515	Percival silty clay, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	6.1	0.7%
1516	Vore silty clay loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	13.0	1.5%
1524	Morconick very fine sandy loam, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	12.9	1.5%
1526	Scroll silty clay loam, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	17.1	1.9%
1750	Ticonic fine sand, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	4.2	0.5%
1849	Kenmoor fine sandy loam, 0 to 2 percent slopes, occasionally flooded	Farmland of statewide importance	1.2	0.1%
5044	Fluvaquents, frequently flooded	Not prime farmland	51.3	5.8%
W	Water	Not prime farmland	20.1	2.3%

Farmland Classification— Summary by Map Unit — Monona County, Iowa (IA133)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Subtotals for Soil Survey Area			327.4	37.2%
Totals for Area of Interest			881.2	100.0%

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

State Threatened and Endangered Records from the Iowa Natural Areas Inventory in the vicinity of the Louisville Bend rehabilitation project.

County	Common Name	Scientific Name	State Status	Federal Status	Latest Obs.
MONONA	Pallid Sturgeon	Scaphirhynchus albus	E	E	2008
MONONA	Ornate Box Turtle	Terrapene ornata	T		1971
MONONA	Grass Pickerel	Esox americanus	T		2011
MONONA	Lake Sturgeon	Acipenser fulvescens	E		
MONONA	Least Shrew	Cryptotis parva	T		1981

By no means does this represent a site survey, but is a record of documented state listed threatened and endangered species in the nearby vicinity. I would not expect least shrew or ornate box turtle, on the Louisville Bend site based on personal knowledge of the site, but care should be taken in case they are encountered. There may be piping plovers or least terns use the site even though they have not been documented in Monona County previously.

From: Peterson, Scott [DNR] [redacted]
Sent: Monday, March 18, 2013 1:44 PM
To: Bozarth, Rebecca L NWO
Cc: Larson, Chris J [DNR]; Chafa, Doug [DNR]
Subject: RE: Louisville Bend State Wildlife Area project

I also wanted to add that Doug Chafa will be providing you with a list of State listed threatened and endangered species that may be affected by the proposed habitat restoration project.

From: Peterson, Scott [DNR]
Sent: Friday, March 15, 2013 9:43 AM
To: [redacted]
Cc: Larson, Chris J [DNR]
Subject: Louisville Bend State Wildlife Area project

The Iowa DNR has reviewed the proposed COE project for the Louisville Bend State Wildlife Area and approve the project.

Scott Peterson

Iowa DNR
Central District Wildlife Supervisor
Boone, Iowa

From: Ledwin, Jane [redacted]
Sent: Monday, March 25, 2013 4:00 PM
To: Laux, Eric A NWO
Cc: Crane, David J NWO; Larson, Chris J [DNR]; Eliza Hines; Casey Kruse; Amy Salveter
Subject: Louisville Bend State Wildlife Area Restoration Project

Greetings Eric -

Please refer to your February 19, 2013, letter to the U.S. Fish and Wildlife Service (Service) requesting a list of federally listed species that may occur in the vicinity of the Lousiville Bend State Wildlife Area. The U.S. Army Corps of Engineers (Corps) is preparing a Supplemental Environmental Assessment for a proposed rehabilitation project for a wetland complex at the Louisville Bend Wildlife Area in Monona County, Iowa, between approximately river miles 681.7 and 685.4. The project is part of the Missouri River Fish and Wildlife Mitigation Project and would occur on land owned and operated by the Iowa Deparment of Natural Resources. The Service submits thes comments purusant to the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and the Endangered Species Act of 1973 (as amended)(16 U.S.C. 1531-1544).

The Service supports the proposed project to rehabilitate the backwater wetland complex at the Wildlife Area from sedimentation during the 2011 Flood. The overwintering hole proposed for the area should help enhance aquatic habitat for resident fish. Ideally the dredged spoil would be returned to the sediment-starved river if possible. Otherwise, removal to a Corps-approved offsite disposal area would avoid adverse effects to adjacent wetlands.

The only federally listed species likely to occur in the project area is the pallid sturgeon which is widely found throughout the river. Provided construction activities are limited to the wildlife area, the work is not likely to adversely affect the pallid.

The Service appreciates the opportunity to comment on the proposed project. If you have any question, please contact me.

Best regards -

Jane Ledwin

Appendix C

Regional General Permit 11-02

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4

May 2013

DEPARTMENT OF THE ARMY PERMIT

Permittee: General Public

Permit No.: 11-02 (2011-2364)

Issuing Office: Omaha District, Nebraska Regulatory Office

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: This Regional General Permit authorizes the following flood protection, reconstruction and repair work for flood damaged areas:

(1) Repair and reconstruction of existing roads.
(2) Construction of temporary roads.
(3) Construction of temporary levees, dikes and berms.
(4) Repair of levees including breach closures.
(5) Protection (e.g. armoring) and/or repair of bridge and linear transportation embankments.
(6) Protection and/or repair of utility structures.
(7) Placement of suitable material for bank stabilization.
(8) Construction of temporary drainage ditches to facilitate the removal of flood water, sheetwater, or excess water.
(9) Restoration of channels and ditches to pre-flooding alignment and capacity.
(10) Protection and restoration of intake and outfall structures.
(11) In-stream disposal of flood-deposited sand/silt material up to 100,000 cubic yards of material per activity. Authorization of in-stream disposal of flood-deposited sand/silt material will be determined on a case-by-case basis. Issues considered will include total and daily amounts of proposed disposal, method of disposal, location of disposal, concurrent disposal activities, time of year and flow rates.

Project Location: Waters of the United States, including wetlands, in the State of Nebraska and the Missouri River in the State of Iowa

This Regional General Permit expires on March 31, 2017

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **See Special Condition 1 on page 5**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the River and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time circumstances. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

ROBERT J. RUCH
District Commander
Colonel, Corps of Engineers

By: Martha S Chieply
MARTHA S. CHIEPLY
Chief, Regulatory Branch
Operations Division

Date: 13 March 2012

*U.S. GPO: 1988-520-324

APPLICATION PROCEDURES

All interested parties proposing work under this Regional General Permit are required to contact:

U.S. ARMY CORPS OF ENGINEERS
NEBRASKA REGULATORY OFFICE – WEHRSPANN
8901 SOUTH 154TH STREET, SUITE 1
OMAHA, NEBRASKA 68138-3621

FAX: 402-896-0997

The following information is required:

1. Name, address, and telephone number of the landowner and the person responsible for the work if other than the landowner.

2. A written description of the proposed work, including the purpose and need; type, composition and volume of fill and/or excavated material; length, width and depth of fill material and/or excavation area; disposal site for the fill and/or excavated material; borrow site for fill material; types of equipment to be used; and impacts to wetlands, streams or other waters of the United States.

3. A written legal description of the project location including section, township, range, and county.

4. Names, addresses, and telephone numbers of adjacent property owners.

5. A set of drawings on 8 1/2 by 11 inch paper, with dimensions of the proposed work, showing:
   a. The project location identified on an aerial map, including the disposal site locations.
   b. A plan or top view of the project area.
   c. A typical cross-section or side view of the project area.
   d. Photographs of the project area.
   e. As applicable, a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.

6. Mitigation to offset impacts to wetlands and streams may be required. The Nebraska Regulatory Office will make this determination at the appropriate time.

7. For all activities located on tribal land, the Nebraska Regulatory Office will coordinate the project with the applicable tribe prior to authorization.

8. No project may proceed until notification approval has been received from the Nebraska Regulatory Office that the proposal meets the Regional General Permit criteria.

NOTE: Permittees proposing work in the Missouri River in the State of Iowa should also submit the above information to the Iowa Department of Natural Resources. It is recommended the information be submitted using the Joint Application Form, "Protecting Iowa Waters", found at: http://floodplain.iowadnr.gov

SPECIAL CONDITIONS

Any authorization granted under this Regional General Permit is subject to the following conditions:

1. Upon receiving approval to perform work under this RGP, the permittee will have 180 days to complete the work. If additional time is needed to complete the authorized activity, a written request for a time extension must be submitted to the Nebraska Regulatory Office.

2. This RGP authorizes the discharge of dredged or fill material and other work associated with flood protection measures and restoration, repair or reconstruction measures performed in waters of the U.S. within the States of Nebraska and Iowa as a result of damages caused by flooding. The work will be limited to that authorized by the Corps through the issuance of the RGP.

3. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency (e.g., National Park Service) with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

The following link provides a map showing the location of the Niobrara National Scenic River:
http://www.nps.gov/carto/PDF/NIOBmap1.pdf

The following link provides a map showing the location of the Missouri National Recreational River:
http://www.nps.gov/mnrr/planyourvisit/maps.htm

The following link provides a map showing the location of the Nebraska rivers listed on the National River Inventory list:
http://www.nps.gov/ncrc/programs/rtca/nri/states/ne.html

4. All channel restoration work will be limited to restoring the area to pre-flood conditions and verified using U.S. Department of Agriculture, Natural Resource Conservation Service aerial photographs, or other qualifiable data, plans, etc.

5. Repair measures authorized herein do not allow for improved drainage of legally drained wetlands or new, permanent drainages that would result in the lowering of basin water retention capacity and/or impacts to the wildlife value of that wetland.

6. All temporary drainage ditches must be restored to pre-flood conditions within 90 days of the end of the flooding conditions.

7. Repair measures authorized herein are to restore areas to pre-flood conditions. Minor deviations may be authorized.

8. Repair and protection measures authorized herein do not allow for the construction of structures (e.g. jetties) which would result in any further stream channel constriction or in the redirection of flows in such a way as to cause upstream or downstream erosion.

9. Temporary levees, accesses, and other fills must involve the least damaging and minimum amount of disturbance/impacts to waters of the United States. Appropriate measures must be taken to maintain near normal downstream flows to minimize flooding.

10. All sediment disposed of in-stream must be free of large wood or other debris.

11. All fill must be of suitable materials and placed in such a manner that the material will not be eroded by expected high flows.

12. All fill material will be obtained from a non-wetland, upland source.

13. The permittee is responsible for ensuring that the Corps is notified of the location of any borrow site that will be used in conjunction with the construction of the authorized activity so that the Corps may evaluate the site for potential impacts to aquatic resources, historic properties, and endangered species. For projects where there is another lead Federal agency, the

permittee shall provide the Corps documentation indicating that the lead Federal agency has complied with the National Historic Preservation Act and Endangered Species Act for the borrow site. The permittee shall not initiate work at the borrow site in conjunction with the authorized activity until approval is received from the Corps.

14. The use of small aggregate, such as streambed material, for bank stabilization and erosion control is prohibited. All erodible fill material associated with bank stabilization must be stabilized.

15. Mitigation plans will be developed in accordance with the 2008 Mitigation Rule and coordinated with the applicable resource agencies on a case-by-case basis.

16. All temporary fills, including sandbags, in waters of the United States must be completely removed and the area restored to pre-flood conditions within 90 days of the end of flooding conditions.

17. Only clean riprap materials will be utilized in order to avoid the percolation of fines that would result in excessive local turbidity.

18. All areas adjacent (contiguous, bordering, neighboring) to jurisdictional waters disturbed by construction shall be revegetated with appropriate perennial native grasses and forbs and maintained in this condition. *Phalaris arundinacea* (Reed Canary Grass), *Lythrum salicaria* (Purple Loosestrife), *Bromus inermus* (Smooth Brome), *Phragmites, sp.* (Common Reed, River Reed) and *Tamarix, sp.* (Salt Cedar), are *NOT* appropriate choices of vegetation. A cover crop may be planted to aid in the establishment of native vegetation. The disturbed areas shall be reseeded concurrent with the project or immediately upon completion. Revegetation shall be acceptable when ground cover of desirable species reaches 75%. If this seeding cannot be accomplished by September 15 the year of project completion, then an erosion blanket shall be placed on the disturbed areas. The erosion blanket shall remain in place until ground cover of desirable species reaches 75%. If the seeding can be accomplished by September 15, all seeded areas shall be properly mulched to prevent additional erosion. When the vegetation has become established, all temporary erosion control materials shall be removed from the project site. Biodegradable or photodegradable materials need not be removed.

19. For bank protection activities, the riprap revetment shall be covered, from the top of the structure down to the annual ordinary high water line, with a minimum of six inches of soil compacted into the voids of the riprap and immediately seeded with either annual rye grass, oats and/or wheat (nurse crop) plus a mixture of native grass species. The Corps must be notified that this has been completed with photo documentation and seed tags.

20. The clearing of vegetation, including trees located in or immediately adjacent to waters of the United States, will be limited to that which is absolutely necessary for construction of the project.

21. All construction debris will be disposed of on an approved upland site in such a manner that it cannot enter a waterway or wetland. The permittee will establish and carry out a plan for immediate removal of debris during construction in order to prevent the accumulation of unsightly, deleterious and/or potentially polluted materials.

22. Equipment for handling and conveying materials during construction will be operated to prevent dumping or spilling materials into the water except as approved herein.

23. All dredged or excavated materials, with the exception of that authorized herein, will be placed on an upland site above the ordinary high water line in a confined area, not classified as a wetland, to prevent the return of such materials to the waterway.

24. Concrete trucks will be washed at a site and in such a manner that washwater cannot enter the waterway.

25. During construction, no petroleum products, chemicals, or other deleterious materials shall be allowed to enter or be disposed of in such a manner so that they could enter the water and that precautions be taken to prevent entry of these materials into the water.

26. All work in the waterway will be performed in such a manner so as to minimize increases in suspended solids and turbidity that may degrade water quality and damage aquatic life outside the immediate area of operation.

27. All earthwork operations on shore will be carried out in such a manner that sediment runoff and soil erosion to the waterbody are controlled.

28. If and when the District Commander has been notified that a dredging or filling activity is adversely affecting fish or wildlife resources or the harvest thereof and the District Commander subsequently directs remedial measures, the permittee will comply with such directions as may be received to suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect as required.

29. The use of machinery in the waterway will be kept to a minimum.

30. A discharge of material may not occur in the proximity of a public water supply unless appropriate approval is given and mitigation measures are identified to offset any adverse effects.

31. If the Corps is notified that work being performed does not comply with, or fall within the scope of, this RGP, the responsible party will take immediate steps, as directed by the Corps, to bring the work into compliance with this permit.

32. If threatened or endangered species are sighted at or near the project site, particularly during construction, work must cease and the Nebraska Regulatory Office and U.S. Fish and Wildlife Service contacted immediately.

33. The permittee, the permittee's contractor or any of the employees, subcontractors or other person working in the performance of the contract shall immediately report the discovery of subsurface features, possible scientific, prehistorical, historical, or archeological data, giving the location and nature of the findings to the State Historic Preservation Officer and the Nebraska Regulatory Office. If discoveries occur on an Indian Reservation, the applicable Tribal Historic Preservation Officer and Nebraska Regulatory Office shall be notified. The permittee shall cease construction or operation at the site of any cultural resource discovery. Work shall not begin until notified by the Nebraska Regulatory Office.

34. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

35. Modification of any existing Federal navigation structure (e.g., revetment, dike, levee, etc.) is NOT authorized by this RGP.

36. Due to public safety concerns and potential structural instability, no equipment shall be staged on Federal navigation structures.

37. The District Commander may require additional special conditions be included in any authorization issued under this RGP to avoid or minimize adverse environmental impacts. The District Commander may also require the processing of an individual permit for an activity determined to have more than minimal adverse environmental effects, individually or cumulatively, or would be contrary to the public interest.

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

JAN 27 2012

Ms. Cheryl Goldsberry
U.S. Army Corps of Engineers, Omaha District
Regulatory Branch
1616 Capitol Avenue
Omaha, Nebraska 68102

RE: State Water Quality Certification for Regional General Permit 11-02 (2011-02364) regarding flood-related protection, reconstruction and repair activities, in waters of the State of Nebraska.

Dear Ms. Goldsberry:

We have reviewed the information received regarding the above-referenced application under the authority of Section 401 of the Clean Water Act of 1977, as amended by the Water Quality Act of 1987.

We therefore, by this letter, provide Section 401 Water Quality Certification. This certification does not constitute authorization to conduct the activity. It is a statement of compliance with Surface Water Quality Standards only, which is one requirement to gain authorization from the U.S. Army Corps of Engineers in the form of a Section 404 permit. If you have any questions, please feel free to call Mary Schroer on my staff, at [redacted].

Sincerely,

Marty Link
Acting Water Quality Division Administrator

cc: Mike George , US Fish & Wildlife Service
Carey Grell, Nebraska Game & Parks Commission
Eliodora Chamberlain, US Environmental Protection Agency

Fields of Opportunities

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
ROGER L. LANDE, DIRECTOR

February 14, 2012

Ms. Martha S. Chieply
Chief, Regulatory Branch
U.S. Army Corps of Engineers
Nebraska Regulatory Office - Wehrspann
8901 South 154th Street, Suite 1
Omaha, NE 68138-3621

Subject: Section 401 Water Quality Certification for Regional General Permit 11-02

Dear Ms. Chieply,

The Iowa Department of Natural Resources is granting Section 401 Water Quality Certification for Regional General Permit 11-02 with the following condition:

- Work proposed within the State of Iowa must be reviewed by Iowa Department of Natural Resources Flood Plain and Sovereign Lands sections to determine if permits are required. Please submit project information using the Joint Application Form, "Protecting Iowa Waters", found at: http://www.iowadnr.gov/InsideDNR/RegulatoryLand/FloodPlainManagement/FloodPlainDevPermits.aspx . Submittal of this form with the listed information will prompt concurrent review by both the Flood Plain Management Program (Toll Free Help Line: 1-866-849-0321) and the Sovereign Lands/Environmental Review Program.

Please provide me with copies of the permits issued for projects within the State of Iowa.

If you have any questions or comments regarding this Section 401 Water Quality Certification, please contact me at the address shown below or call ([redacted].

Sincerely,

Christine M. Schwake

Christine M. Schwake
Environmental Specialist

Appendix D

2011 Flood Damages

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISVILLE BEND STATE WILDLIFE AREA
FISH AND WILDLIFE HABITAT REHABILITATION
MONONA COUNTY, IOWA
MISSOURI RIVER MILE 681.7-685.4

May 2013

Louisville Bend damages sustained from the 2011 flood event. Photo taken October 24, 2011

Cross levee between the upper and lower management areas blowout. Photo taken October 24, 2011

Pump station sanded in. Photo taken October 24, 2011

Rear view of pump station. Photo taken October 24, 2011

Existing connectivity channel with sediment deposition. Photo taken October 24, 2011

Existing connectivity channel with sediment deposition. Photo taken October 2012